

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number set forth below.

Respectfully submitted,



James A. Oliff  
Registration No. 27,075

Kevin M. McKinley  
Registration No. 43,794

JAO:KMM/jfl

Attachment:  
Appendix

Date: January 8, 2003

**OLIFF & BERRIDGE, PLC**  
**P.O. Box 19928**  
**Alexandria, Virginia 22320**  
**Telephone: (703) 836-6400**

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## APPENDIX

## Changes to Claims:

Claims 35-46 and 48-50 are canceled.

The following is a marked-up version of the amended claims:

28. (Amended) A magnetic transducer, comprising:

a nonmagnetic layer having a pair of surfaces opposing each other;  
a soft magnetic layer formed on one surface of the nonmagnetic layer;  
a ferromagnetic layer formed on the other surface of the nonmagnetic layer;  
an antiferromagnetic layer formed on the ferromagnetic layer on the side

opposite to the nonmagnetic layer;

an interlayer formed in a layer which is at least either the soft magnetic layer or the ferromagnetic layer, the interlayer having magnetism and having higher electrical resistance than the electrical resistance of at least a part of the layer in which the interlayer is formed, wherein one of the following conditions is satisfied:

1) the interlayer contains at least one element in a group consisting of manganese (Mn), chromium (Cr), nickel (Ni), copper (Cu), rhodium (Rh), iridium (Ir) and platinum (Pt),

2) the magnetic transducer further comprises an inserted layer formed at least either between the interlayer and the nonmagnetic layer or on the side opposite to the nonmagnetic layer with respect to the interlayer, the inserted layer containing at least one element in a group consisting of manganese, chromium, nickel, copper, rhodium, iridium and platinum, or

3) the magnetic transducer further comprises a thermal stabilization layer formed at least either between the interlayer and the nonmagnetic layer or on the side opposite to the nonmagnetic layer with respect to the interlayer.



34. (Amended) A magnetic transducer according to claim 28, wherein the inserted layer is formed at least either between the interlayer and the nonmagnetic layer or on the side opposite to the nonmagnetic layer with respect to the interlayer, the inserted layer containing at least one element in a group consisting of manganese, chromium, nickel, copper, rhodium, iridium and platinum and a thickness of the inserted layer is more than 0.03 nm and less than 0.6 nm.

47. (Amended) A thin film magnetic head having a magnetic transducer, a magnetic transducer comprising:

- a nonmagnetic layer having a pair of surfaces opposing each other;
- a soft magnetic layer formed on one surface of the nonmagnetic layer;
- a ferromagnetic layer formed on the other surface of the nonmagnetic layer;
- an antiferromagnetic layer formed on the ferromagnetic layer on the side

opposite to the nonmagnetic layer;

an interlayer formed in a layer which is at least either the soft magnetic layer or the ferromagnetic layer, the interlayer having magnetism and having higher electrical resistance than the electrical resistance of at least a part of the layer in which the interlayer is formed, wherein one of the following conditions is satisfied:

- 1) the interlayer contains at least one element in a group consisting of manganese, chromium, nickel, copper, rhodium, iridium and platinum,
- 2) the magnetic transducer further comprises an inserted layer formed at least either between the interlayer and the nonmagnetic layer or on the side opposite to the nonmagnetic layer with respect to the interlayer, the inserted layer containing at least one element in a group consisting of manganese, chromium, nickel, copper, rhodium, iridium and platinum, or



3) \_\_\_\_\_ the magnetic transducer further comprises a thermal stabilization layer formed at least either between the interlayer and the nonmagnetic layer or on the side opposite to the nonmagnetic layer with respect to the interlayer.

